

**Department of Conservation
California Abandoned Mine Lands Forum
801 K Street
Sacramento, CA 95814**

**August 11, 2004
Meeting Notes**

Facilitator: Chris Harris, Harris and Company

Meeting Summary: Chris Harris, Harris and Company

Attendees:

Charlie Alpers, USGS
David Bieber, Geocon
Janine Clayton, US Forest Service
Ron Clementsen, Fish and Wildlife Service
Doug Craig, Department of Conservation
Jim Gusek, Golder Associates
Sam Hayashi, Department of Conservation
Chris Harris, Harris & Company
David Lawler, BLM/AML
Kyle Leach, Holdredge & Kull
Richard Judd, Judd Associates
Stephen Lofholm, Golder Associates
Gant Massey, Bitterroot Restoration
Maureen Mathias, Golder Associates
Patrick Morris, Regional Water Quality Control Board, Central Valley Region
Jason Muir, Holdredge & Kull
Kim Mulhorn, US Army Corps of Engineers
Eugene Mullenmeister, Shaw Environmental
Donna Podger, Bay Delta Authority
Heather M. Smith, Department of Conservation
Jane Soloway, State Water Resources Control Board
Ron Wilson, Bitterroot Restoration

Agenda:

- I. Welcome, Introductions, and Agenda Review
- II. Presentations
- III. Announcements
- IV. Next Meeting

Meeting:

I. Welcome, Introductions, and Agenda Review

Chris Harris welcomed AML Forum attendees. Meeting participants introduced themselves. The agenda was reviewed and the presentation on Legal Memorandum re: Statutes Potentially Assisting or Hindering Abandoned Mine Reclamation Activities was postponed.

II. Update: Passive Treatment Project on the Golinsky Mine, by James Gusek, P.E. Senior Project Manager, Golder Associates

Jim Gusek's update on the Passive Treatment Project covered three project phases: Bench test construction and operation results; Pilot scale construction; and Full scale design and construction (a look at the future). Golinsky Mine is an abandoned underground mine that is discharging acidic, heavy metal containing water into a tributary of Shasta Lake. Golder Associates is conducting bench, and pilot ~~and full~~ scale tests on ways to remove metals and raise the pH using passive treatment methods. The methods are classified into major and minor mechanisms as follows:

Major:

- **Sulfide and carbonate precipitation via sulfate reducing bacteria**
- Hydroxide and oxide precipitation
- Filtering of suspended material and precipitation
- Carbonate dissolution/replacement

Minor

- Metal uptake into live roots, stems, and leaves
- Adsorption and exchange with plant, soil, and other biological materials

Bench tests were conducted between January and May 2004 to establish the appropriateness of using the sulfate reducing bacterial method as highlighted above. One of the challenges Jim's group faced was constructing the bench test setup because access to the mine site was extremely challenging.

Jim reported that the bench ~~pilot~~ test cell that used a moderate amount of rice hulls as the test medium yielded the best results. Jim's team moved forward with the pilot test, which, with its larger scale, presented additional construction challenges. The construction required an 8,000 foot long, one-inch diameter pipeline system, transporting over 43 tons of construction materials across the lake in a WW-II landing craft, and unloading the materials with an temporary aerial tramway. In July, the first samples were taken and the analytical results indicate the system is functioning as expected. Jim acknowledged the participants in the study:

USFS – Brad Shipley

SAIC – Douglas Jamieson

Curry Group, Inc. – Don Lindsay

Lake Shasta Caverns – Matt Doyle and Patton Bailey

Digger Bay Marina – (Seven Crown Resorts)

Discussion:

Patrick Morris asked how long the organics would last. Jim said that the initial data showed that organic matter would last 20 years. The limestone used in the bench system passive treatment would last approximately 10 years. The pilot study will last two years.

David Lawler asked about the construction costs. Full scale project has construction costs of \$1,000,000. This includes building a road to the treatment site. Operation and maintenance costs require replacing the organic material every 20 years and some disposal costs. The bottom line is that passive treatment is about half the cost of active treatment.

Question: What volume is coming out of the mine? Jim answered that the tests are capturing and treating almost everything coming out of the mine right now. The full scale design might be for a peak flow of 115,000 gallons per day. (about 80 gallons a minute)

Question: What was the increase in nickel about (from pilot test to the July sampling)? This is probably indicative of the behavior of the system in the first filling. As the system matures, the nickel levels will likely flip flop.

Question: Treating the outflow of the mine is a bandaid solution. Will the outflow have to be treated forever? **Answer:** We don't know.

David Bieber said that reopening mines for remining is politically unpopular, but has been proposed as a more cost-effective solution to controlling pollutants in mine outflows. The east coast is more receptive to remining as a feasible solution. Remining was proposed as one alternative for Iron Mountain Mine, but it was not recommended as it is politically infeasible.

Question: Do cold temperatures affect the operation? Jim said that as long as the bacterial population develops in the summer, the effect of cold temperatures is minimal. He said that a black pipeline helps with temperatures. As long as the water keeps moving, everything is okay during very cold temperatures.

Question: What is the elevation of the mine? Jim said it is about 1,900 feet above sea level but he has systems in Peru and Chile that operate at elevations close to 13,000 feet.

Doug Craig asked if there were any new developments for mercury removal using passive treatment. Jim said that nothing is new, but that a system is being used in Peru to remove mercury and performing very well. He said that research of the effectiveness of passive treatment to remove methyl mercury is needed and important.

Second Presentation: Presentations: Yuba River Watershed – Mining, Assessment, and Restoration Potential, by Gant Massey, Vice President, Bitterroot Restoration Inc.

Gant Massey opened his presentation with a brief summary of the work done by Bitterroot Restoration, which includes planning, nurseries of native plants, restoration and research. His presentation discussed a project he oversaw in Montana that had results and application to the Yuba River Watershed. Gant's presentation focused on the Eastern Washington Tributary of the Columbia River through Missoula, Montana. A 100-year storm pushed between 2 and 3 million cubic yards of mine tailings into the river system. Parts of the river are still dead.

Like the Yuba River, the Eastern Washington tributary has multiple ownerships in an area where property rights are sacrosanct. EPA will not invoke eminent domain to get treatment. Restoration has to be voluntary. Gant's team has sampled waste and compared that with riparian assessments in order to try to link site conditions with treatments on the ground.

Gant described the Riparian Evaluation System he's using. He begins with stating water quality objectives. His problem statement is typically a polygon that considers things like management areas of interest, elevation, disturbance, substrate, and other factors. He identifies environmental variables and looks at inputs to the ecosystem.

At the Montana project, most of the problems in the North Fork are coming from bank instability. The results for Yuba River would be different from the East Washington tributary, but the riparian evaluation process would be the same.

Gant emphasized the importance of getting buy-in from the public and regulators. He distributed a handout that described the process in detail.

He showed photos of streambanks in varying conditions to illustrate how he classifies them into Class 1 (active erosion), 2 (more stable conditions, but still active erosion), and 3 (woody area with roots binding the streambank, hence no erosion).

At some sites where there are slickens, such as in a Class 1 site, the treatment might be removal. At Class 2 sites, the impaired area might receive treatment and replanting. Moderate to slightly impacted sites might be treated with best management practices and replanting.

The Yuba River is the third largest tributary of the Sierras. It provides drinking water and spawning for salmon. It has been impacted by mining and is highly controlled by 19 dams. Multiple land ownership prevails. His goal is to develop a riparian evaluation system for the Yuba River on a site-by-site basis, co-locating with monitoring sites where possible. Bitterroot has submitted proposals for such work, but none is underway.

Gant talked about his work with RAMS, a US Army Corps of Engineers system that is, at its heart, watershed assessment. The 10-mile project in Montana involves the Corps, US EPA, Bureau of Reclamation, the State of Montana Dept. of Environmental Quality, and Department of Environmental Protection. He said some of the keys to a successful project are:

- Know the contract, including limitations
- Have agreements in place
- Know your projects, including the limitations of your projects
- Know the Corps personnel
- Know the contractors personnel

Discussion

Question: How does Gant distinguish between the impacts of mining vs. grazing or other activities? Gant said that multiple uses and impacts are a fact of life. The solutions are applied according to the conditions on the ground.

Donna Podger asked if Bitterroot were getting funding for RAMS on the Yuba River. Gant said no at this time. She asked if funding were available, what would be the scope. Gant said it would be a good idea to focus where the South Yuba River Conservation League (SYRCL) is monitoring, at the South Yuba and Deer Creek.

Doug Craig asked if Gant had any pointers on how to compete successfully for RAMS funding. Gant said to work with willing partners, identify discrete pieces of a stream with well known boundaries and data collection, and develop a mutually agreed upon plan for funding. He recommended knowing what all of the parties want.

Kim Mulhorn agreed. She said that in most cases, the Army Corps can partner fairly easily with other agencies. She said working through a Memorandum of Understanding makes it simple to move and share funding.

Donna Podger asked if the Corps had any successful partnership projects in California. Kim said no but the Corps is working on this.

Jim Gusek asked where Yuba River data can be found. Gant said: SYRCL.org

III. Announcements

Doug Craig, DOC/AMLU said that Senate Bill 649 passed and included a fee on gold and silver mining. Fee revenues will be used to remediate abandoned mines. Proceeds from the fees are still coming in. DOC will sponsor two bat gate-building workshops this year, with one in November in the Mojave National Preserve. They may also hold a workshop in the spring in Plumas National Forest. Workshops may include foam closure training. As in past years, DOC/AMLU is dependant upon other agencies involved in the AML Forum to bring projects for partnerships.

Doug also said that the AMLU is pulling together an EXCEL planner that is going to be easier to use than the current planner.

Charlie Alpers, USGS said that his group is writing up the final reports of the Bear-Yuba project. USGS will put together an interpretive report on the Bear River. Chapters will include sites that USFS worked on.

Charlie also said that USGS is in the final stages of releasing a report on Lake Natoma. The report was the basis for the California Health Department's fish advisory for the lake. The release of the report and the final advisory will be coordinated. The fact sheet is due in early September.

Other things that USGS is currently working on are:

- Writing reports on studies of the Upper Yuba River.
- Consultation on a variety of land activities including suction dredging, hardrock mining in Shasta-Trinity area, and critical fish habitat.
- Collaborating with the Forest Service on discharges from Valencia mining. A specific interest is whether or not bald eagles are affected by reclamation activities.

David Lawler, BLM/AML, said he did not go to the 7th International Conference on Mercury Pollution in early June but that the conference showcased work on mercury dredge tailings of Clear Creek, a tributary of the upper Sacramento River. He said that some of the most innovative bio-remediation techniques were addressed at the conference.

David also said that the public hearing required by CERCLA would be held that evening in Grass Valley to get input on the Boston Mine cleanup effort. Cleanup of the sluice tunnel is slated for next summer.

David reported on other projects:

- USFS, BLM, and USEPA are about half-way through the Salinas River project.
- The Rinconada project will be wrapping up in September. BLM will have an on-site repository and ECA for the next two years for the Riconada site. The cleanup is expected to cost an estimated \$2 million.
- Considerable effort is being spent in the Putah Creek watershed. Preliminary results are back from James Creek samples.

Janine Clayton, USFS reported that her agency is working on two new program leads here and in Washington DC. They are converting current programs to a new database. Ongoing projects include:

- A couple of ECAs have been awarded for Lake Tahoe.
- A couple of other proposals for ECAs were over the cost estimate. They may possible readvertise or reduce the scope to fit the funding available.

- Vandals are now hauling in equipment to cut through the bat gate at the Sequoia project on Kern River. Safety closures in Sequoia have been completed.
- Contracts for engineering services were awarded for two mines in the Plumas National Forest and two mines in the Lake Tahoe area.

Donna Podger, Bay Delta Authority reported that her agency will publicize Requests For Proposals for projects that affect Bay Delta water quality in winter. She reminded the AML Forum that the best way to be informed of grant opportunities is to go to the main CalFed website and sign up. She was asked whether or not proposals would be “stand alone”. She said yes, and that each RFP will have its own rules and technical review.

Dave Beiber, GeoCon, said he is the incoming president of the Association of Engineering Geologists. He told the AML Forum that the annual meeting of AEG will be in August this year, and in late September in Las Vegas in 2005. The website for information and to present a project is www.AEGWEB.org

IV. Next Meeting:

November 17, 2004

9 a.m. - Noon

John Muir Conference Room
801 K Street, 20th Floor
Sacramento, Ca. 95814

Suggested agenda items:

Legal Memorandum

Closure of asbestos mines in Coaling (Hollister BLM)

Rinconada Removal (USFS or USEPA)

Iron Mountain Mine update

Reconstruction of Virginia and Truckee Railroad through Carson City/Superfund Site (Nevada DOT)